

WHAT IS CLAIMED IS:

1. A method for removing a resist from a liner on a mask on a semiconductor substrate, comprising:
 - 5 providing an etching plasma comprising at least hydrogen at a predetermined temperature level and a predetermined pressure level in a reaction chamber; and
- 10 etching the resist selectively to the mask with the plasma for a predetermined period of time.
2. The method according to claim 1, wherein the etching plasma comprises of a predetermined amount of nitrogen as a diluent.
- 15 3. The method according to claim 2, wherein a ratio of Nitrogen to Hydrogen is varied starting from a standard Nitrogen to Hydrogen mixture of 96:4 to a stronger Hydrogen rich chemistry based on an intended application.
- 20 4. The method according to claim 1, wherein the etching plasma comprises of a predetermined amount of CF₄.
- 25 5. The method according to claim 4, wherein the predetermined amount is less than 5 per cent.
- 30 6. The method according to claim 1, wherein the etching plasma is free of oxygen.

7. The method according to claim 1, wherein the predetermined pressure level of the etching plasma is in the range of 50 to 300 Pa.
- 5 8. The method according to claim 1, wherein the predetermined temperature is in the range of 150°C to 350°C.
9. The method according to claim 1, wherein the 10 lithography mask consists of a hard mask.
10. The method according to claim 9, wherein the hard mask consists of carbon.
- 15 11. The method according to claim 1, wherein the resist is a carbon-based photo resist.
12. The method according to claim 1, wherein the liner comprising of SiON is deposited on the mask prior 20 to depositing and stripping the resist.
13. The method according to claim 1, wherein the semiconductor substrate is a Si-substrate.
- 25 14. The method according to claim 1, wherein the selectivity of the mask to the resist is equal or higher than 10, preferably higher than 15.
15. The method according to claim 1, wherein the resist 30 is stripped with an across wafer non-uniformity of <3% one sigma.

16. The method according to claim 1, wherein the resist mask is stripped completely from the surface of the semiconductor substrate.